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## **BUSINESS CYCLES AND ECONOMIC RECOVERY IN EUROPEAN UNION. A SURVEY**

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**Abstract:**

*This paper explores the evolution of the European Union economy during the last contraction, between 2007 and 2009. Assuming that the signs of recovery visible in the third quarter of 2009 will be sustainable, year 2010 will be the end of the crisis for the European and world economy. Looking at short-term evolutions we find out that business cycles in European Union are not really synchronized. Moreover, the amplitude of business cycle, determined as difference between growth rate in peak and growth rate in trough (annually data) is very different. UE27 is yet a two speed economy, with big differences between Old Member States and New Member States. The economic policies during the recovery will have to adapt to these differences.*

**Keywords:** *business cycle, crisis, recovery, European Union*

### **1. Introduction**

The full impact of the economic crisis on the world economy is far to be estimated but there are now a lot of signs of recovery. A new interest of specialists and policy makers in economic fluctuations theory seems to be one of the effects of this profound recession, because every country and government looks after the right answers to ensure a rapid recovery and to prevent other deep recessions.

Crises and recessions are parts of business cycles, exactly like expansions. The past 50 years were a good experience for the world economy, with growth periods lasting for many years and slowing downs in real GDP growth rate perceived as economic decline lasting for months. During the 20th century EU, USA and Japan, as well as other advanced OECD countries, have experienced high rates of growth, increasing the real value of GDP by a factor higher than 9 in EU, 18 in USA and 50 in Japan from 1990 to 1997 (Guisan, M.C., Cancelo, M., Aguayo, E. 2001). This important economic growth was possible with very soft fluctuations during the second half of the century because several factors, including the important role of industry and external trade.

One of the best known definition of *business cycle* was provided by the economists Arthur F. Burns and Wesley C. Mitchell in 1946, in their book *Measuring*

Business Cycle (Burns, A., Mitchell, W., 1946): business cycles are a type of fluctuation found in the aggregate economic activity of nations that consist in expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into expansion phase of the next cycle. Another definition (Parkin, M., Powell, M., Matthews, K., 2005) says that business cycle is a periodic but irregular up-and-down movement in economic activity. Business cycles are not regular, predictable or repeating cycles. Their timing changes unpredictably. Every business cycle has two phases (recession and expansion) and two turning points (a peak and a trough). Another recent definition of business cycle provided by the Economic Cycle Research Institute (ECRI), an independent research agency says business cycle is pronounced, pervasive and persistent advances and declines in aggregate economic activity, which cannot be defined by any single variable, but by the consensus of key measures of output, income, employment and sales

The National Bureau of Economic Research (NBER) in the United States is the pioneer of business cycles dating and other agencies use the NBER methods. For other countries than USA, business cycles are identified by independent research agencies and individual economic researchers. Economic Cycle Research Institute (ECRI) for example, identifies and dates the business cycle in 19 countries.

Business cycles, as short term fluctuations, are only one part of economic fluctuations theory. There are at least four main cycles, named after the economists that studied them, Kondratieff (54 years), Kuznetz (18 years), Juglar (9 years) and Kitchin (4 years), with different causes and evolutions. The relationship between them is important and there are researches about cyclical synchronization. There are two opinions: based on Schumpeter contribution to the economic fluctuations theory, some economists suggest that the four types of cycles are harmonics (Cameron, J. 1997). A Kondratieff wave could consist of three lower degree Kuznetz waves. Each Kuznetz wave could, itself, be made up of two Juglar waves. Similarly two (or three) Kitchin waves could form a higher degree Juglar wave. If each sequence or degree were in phase, more importantly if the downward arc of each was simultaneous so that the nadir of each was coincident it would explain disastrous slumps and consequent depressions. Contemporary opinion is that there is insufficient evidence decisively to determine whether or not the cycles do synchronize in this way.

## **2. Business cycles: causes, measures and dating**

The causes of cycles are much disputed. Some centuries ago many cycles arose from agricultural crisis, and during the 19th century, up until the great depression of 1929, industry and external trade became one of the most important causes of economic fluctuation and its international transmission. In the early 2000<sup>th</sup> there were opinions (Guisan, M.C., Cancelo, M., Aguayo, E. 2001) that the lack of industrial supply or demand is generally not problematic for advanced economies. For Schumpeter (1911, 1939), both business cycles as well as growth result from innovation. According to his conception, innovation occur almost necessarily in equilibrium, as this stage of

the cycle implies zero profits for existing products and the stable environment facilitates risk assessment (Steindl, S., Tichy, G., 2009).

Until the 1980s most of the mainstream economists used to regard short-term economic fluctuations (or *business cycles*) as deviations around a smooth and stable trend growth path of GDP. These two phenomena, *trend* and *cycles*, were considered to be determined independently and for analyzing their behavior, two different types of macroeconomic models were used (Gaggl, P., Steindl, S., 2007): while the trend component was explained by neoclassical growth models (emphasizing the importance of capital accumulation, labor and productivity growth), the cyclical component was analyzed with Keynesian macroeconomic models, considering the interaction of consumption and investment as key factors. This dichotomy was broken by the introduction of *Real Business Cycle (RBC)* theory initiated by Kydland & Prescott (1982) as well as Long & Prescott (1983).

### **3. Peak, recession and trough in the last business cycle in European Union**

In the third quarter of 2009 European Union appears to be at a turning point. There are signs of recovery in European economy, and everybody think that we are coming out of the deepest recession since 1930s. Although a large number of crises have occurred after World War II, no other has been as severe as this recession and almost all of them remained national or regional. The new interest in crises, economic cyclical movements, business cycles dating and Great Depression has emerged as a result of the deepest, most global crisis in the last decades. European Commission note that in some ways the current crisis resembles the leverage crisis of the classical pre-world war I gold standard in 1873, 1893 and 1907, and there are similarities between the 1907 – 1908, 1929 – 1935 and 2007 – 2009 crises. These similarities (European Commission, 2009) regard initial conditions and geographical origin: they all occur after a sustained boom, characterized by money and credit expansion, rising asset prices and over optimistic risk taking. All were triggered in first instance by events in the US, although the underlying causes and imbalances were more complex and more global, and all spread internationally to deeply affect the world economy.

United States were the country which came first in crisis and the first which declared itself in recession. The National Bureau of Economic Research (NBER) in the United States identified December 2007 as the peak month, after determining that the subsequent decline in economic activity was large enough to qualify as a recession. NBER definition of recession is: a recession is a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale retail sales.

**Table 1. US Business Cycle Expansion and Contractions**

BUSINESS CYCLES REFERENCE DATES		DURATION IN MONTH			
Peak	Trough	Contraction	Expansion	Cycle	
				Peak to peak	Trough to trough
August 1929 (III)	March 1933 (I)	43	21	64	34
May 1937 (II)	June 1938 (II)	13	50	63	93
February 1945 (I)	October 1945 (IV)	8	80	88	93
November 1948 (IV)	October 1949 (IV)	11	37	48	45
July 1953 (II)	May 1954 (II)	10	45	55	56
August 1957 (III)	April 1958 (II)	8	39	47	49
April 1960 (II)	February 1961 (I)	10	24	34	32
December 1969 (IV)	November 1970 (IV)	11	106	117	116
November 1973 (IV)	March 1975 (I)	16	36	52	47
January 1980 (I)	July 1980 (III)	6	58	64	74
July 1981 (III)	November 1982 (IV)	16	12	28	18
July 1990 (III)	March 1991 (I)	8	92	100	108
March 2001 (I)	November 2001 (IV)	8	120	128	18
December 2007 (IV)			73		81

Source: NBER, 2009

Recession is often seen as a period during real GDP decreases – the growth rate of real GDP is negative – for at least two consecutive quarters. There are a lot of reasons to accept this definition, namely: most of recessions identified by researchers and agencies consist of at least two quarters; the lack of monthly data for real GDP; monthly or quarterly statistics on employment, productivity, consumption, foreign trade are not available for all countries. Comparing real GDP growth rate in EU, United States and Japan (Table 2) we find out that the peak quarter is the last quarter of 2007 for USA, and the first quarter of 2008 for EU and Japan. Latest data for third quarter of 2009 confirm that Japan's recovery began in second quarter of 2009, and USA and UE27 recovery began in the third quarter of 2009. Defining a recession as a period between a peak and a trough we can say that Japan's recession was the shortest (4 quarters), and USA recession was the longest (6 quarters). In European Commission's reports there are some fears about the sustainability of this recover.

**Table 2. EU, USA and Japan real GDP growth rates: peak quarters and recession**

- % changes from last semester

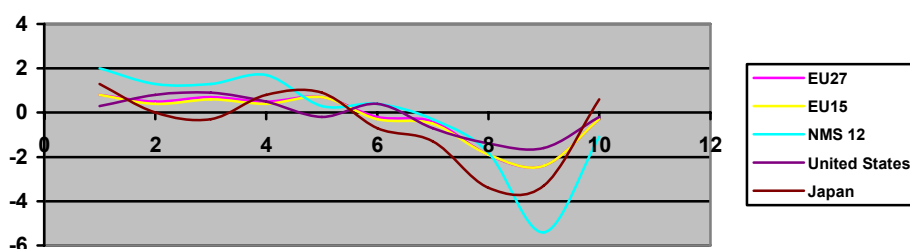
Country/time	2007 q01	2007 q02	2007 q03	2007 q04	2008 q01	2008 q02	2008 q03	2008 q04	2009 q01	2009 q02	2009 Q03
<b>European Union (27 countries)</b>	0.8	0.5	0.7	0.5	0.7	-0.2	-0.4	-1.9	-2.4	-0.3	0.2
<b>United States</b>	0.3	0.8	0.9	0.5	-0.2	0.4	-0.7	-1.4	-1.6	-0.2	0.9
<b>Japan</b>	1.3	0.0	-0.3	0.8	0.9	-0.7	-1.3	-3.4	-3.3	0.6	-

Source: Eurostat database, 2009

Looking at European Union as a two speed economy, we can see some differences between Old Member States (EU15) and New Member States (NMS12).

EU15 shows a greater synchronization with US and Japan, in terms of crisis beginning and the amplitude of real GDP growth rate oscillation. We can see a cyclical delay for NMS, because the peak quarter for most NMS was the third quarter of 2008 (Annex 1), and we also can see a different amplitude of the business cycle. The growth rate of real GDP (quarterly data, percentage changes quarter/quarter) was between 3.7% (Latvia q01/2007) and – 11.3% (Lithuania q01/2009) in New Member States, and it was between 1.5% (Luxembourg q01/2007) and – 4,9% (Sweden q04/2008), excepting Ireland (+7% q01/2007, -5,6% q004/2008) in Old Member States (Table 3, Table 4).

**Figure1. Real GDP growth rates - quarterly data**



The financial crisis has hit the various Member States to a different degree. The extent to which the financial crisis has been affecting the individual Member States of the European Union strongly depends on their initial conditions and the associated vulnerabilities. These can be group in three categories: (1) the extent to which housing markets had been overvalued and construction industries oversized; (2) the export dependency of the economy and the current account position; (3) the size of the financial sector and/or its exposure to risky assets. Most empirical studies show a cyclical convergence between Euro Area Member States, but there are some studies that contradict this hypothesis. Chen & Mills (Chen, X., Mill, T., 2009) find that the presence of heterogeneous and codependent cycles contradicts the Optimum Currency Area criterion that members of a monetary union should share a high degree of growth cycle synchronization. They find out that seven European countries (Germany, Austria, Netherlands, Spain, France, Belgium, Italy) were at different stages in their growth, even after entering the Euro Area.

The peak quarters for European Union countries are different. The twelve New Member States can be analyzed in five groups, looking at the peak quarter (Table 3): Estonia, Latvia, Slovakia (q04/2007); Lithuania; Hungary (q01/2008); Malta, Romania (q02/2008); Czech Republic, Poland, Slovenia (q03/2008); Cyprus (q04/2008). The Baltic States confronted the earliest and deepest recession. Cyprus registered a one year delay,

**Table 3. New Member States of EU: peak quarters and recession. Real GDP growth rates**  
% to previous quarter

Country/time quarter/quarter	2007 q01	2007 q02	2007 q03	2007 q04	2008 q01	2008 q02	2008 q03	2008 q04	2009 q01	2009 q02	2009 Q03
<b>European Union (27 countries)</b>	<b>0.8</b>	<b>0.5</b>	<b>0.7</b>	<b>0.5</b>	<b>0.7</b>	<b>-0.2</b>	<b>-0.4</b>	<b>-1.9</b>	<b>-2.4</b>	<b>-0.3</b>	<b>0.2</b>
NMS 12	1,9	1,2	1,3	1,7	0,3	0,3	-0,2	-1,7	-5,4	-1,1	
Bulgaria	:	:	:	:	:	:	:	:	:	:	
Czech Republic	2.5	0.2	1.5	1.0	0.1	1.2	0.5	-1.3	-4.8	0.1	0,8
Estonia	3.6	0.3	0.4	1.3	-1.1	-1.5	-3.0	-4.5	-6.0	-3.4	-2,8
Cyprus	1.4	1.0	1.0	1.0	1.1	1.1	0.1	0.2	-0.6	-0.4	-1,4
Latvia	3.7	3.4	1.5	0.5	-2.4	-2.3	-1.8	-4.7	-11.0	-0.8	-
Lithuania	2.8	2.7	2.3	1.6	0.5	-0.1	-0.7	-1.2	-11.3	-7.7	6,0
Hungary	-0.1	-0.1	0.4	0.6	0.9	-0.2	-1.0	-1.9	-2.6	-2.0	-1,8
Malta	1.1	0.4	0.8	0.5	1.1	0.5	0.0	-1.1	-1.2	-0.9	-
Poland	1.7	1.3	1.4	2.1	1.5	1.0	0.4	-0.1	0.1	0.7	-
Romania	1.3	1.3	1.0	2.9	3.5	1.7	-0.1	-2.8	-4.6	-1.1	-0,7
Slovenia	1.5	1.6	1.9	0.4	1.8	0.8	0.7	-4.1	-6.4	0.7	-
Slovakia	2.0	1.9	2.6	7.0	-3.3	1.8	1.8	2.1	-11.0	2.2	1,6

Source: Eurostat 2009

**Table 4. Old Member States of EU: peak quarters and recession. Real GDP growth rates**  
% to previous quarter

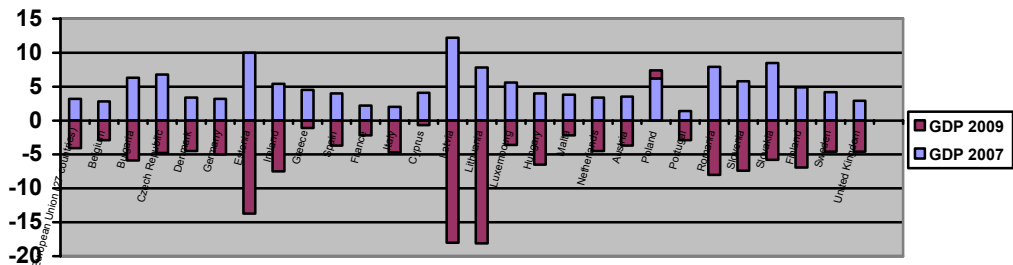
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<b>European Union (27 countries)</b>	<b>0.8</b>	<b>0.5</b>	<b>0.7</b>	<b>0.5</b>	<b>0.7</b>	<b>-0.2</b>	<b>-0.4</b>	<b>-1.9</b>	<b>-2.4</b>	<b>-0.3</b>	<b>0.2</b>
Belgium	1.0	0.6	0.5	0.4	0.5	0.4	-0.2	-2.1	-1.8	-0.1	0.5
Denmark	0.9	-0.3	1.2	0.1	-1.3	1.0	-1.4	-2.0	-1.3	-2.6	-
Germany	0.3	0.3	0.8	0.1	1.6	-0.6	-0.3	-2.4	-3.5	0.4	0,7
Ireland	7.0	-2.0	0.1	1.4	-0.9	-2.1	0.5	-5.6	-2.3	0.0	-
Greece	1.1	0.7	1.0	0.6	0.9	0.9	0.4	-0.7	-0.5	-0.1	-0.3
Spain	0.9	0.8	0.7	0.6	0.4	0.0	-0.6	-1.1	-1.6	-1.1	-0.3
France	0.7	0.4	0.6	0.3	0.5	-0.4	-0.3	-1.5	-1.4	0.3	0.3
Italy	0.3	0.1	0.2	-0.4	0.5	-0.6	-0.8	-2.1	-2.7	-0.5	0.6
Luxembourg	1.5	0.9	1.7	0.4	0.4	-1.0	-0.4	-2.9	-1.7	-0.3	-
Netherlands	1.0	0.6	1.1	1.5	0.7	-0.1	-0.4	-1.0	-2.4	-1.0	0.4
Austria	1.0	0.4	0.5	1.0	1.1	0.3	-0.4	-1.1	-2.6	-0.5	0.9
Portugal	1.1	0.3	-0.1	0.5	0.2	0.1	-0.5	-1.7	-2.0	0.5	0.9
Finland	1.4	0.9	0.3	1.4	0.7	0.0	-1.1	-2.5	-3.0	-2.6	-3.0
Sweden	0.6	0.8	0.5	0.4	0.5	-0.2	-0.5	-4.9	-0.9	0.2	-
United Kingdom	0.7	0.6	0.5	0.5	0.6	-0.1	-0.7	-1.8	-2.5	-0.6	-0.4

Source: Eurostat 2009

Based on annual data we find a negative correlation between the positive growth rate in 2007 and the negative growth rates of 2009 (correlation coefficient value –

0,716). Calculating business cycle amplitude as the difference between the growth rate in 2007 and the growth rate in 2009 we obtained the medium value 7,3 for EU. There are four groups of countries: 7,2 - 4,3 Austria, Italy, Malta, Belgium, Greece, Poland, Cyprus, France, Portugal; 9,2 - 7,5 Luxembourg (Grand-Duché), Sweden, Germany, Denmark, Netherlands, Spain, United Kingdom; 15,9 - 10,5 Romania, Slovakia, Slovenia, Ireland, Bulgaria, Finland, Czech Republic, Hungary; 30,2 – 23,7 Latvia, Lithuania, Estonia. As we can see in Figure 2, the fall in GDP was bigger for the countries with accelerated growth in 2007. There are some possible explanations for New Member States and their great fall: the lack of economic policies, both in expansion and recession for some countries; external shocks and the dependence of foreign investments; pro-cyclical policies in expansion. It could be interesting to study the impact of these evolutions on catching-up process and real convergence of NMS.

Figure 2. Growth and fall in GDP for EU27 Member States



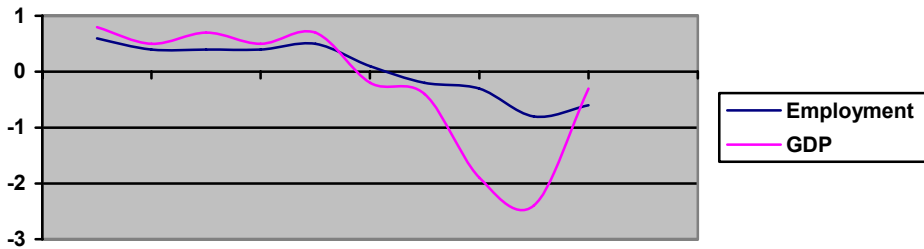
Social implications of the economic crisis are very important. The signs of recovery, announced for the third quarter of 2009 in real GDP growth for EU27 (based on euro area countries growth of 0.4%) are not the same for labor market. Employment and unemployment are generally lagging indicators, and the unemployment rate tends to lag behind the employment.

**Table 4. European Union real GDP growth and employment – quarterly data**

	2007Q1	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2
EU27 Employment	0,6	0,4	0,4	0,4	0,5	0,1	-0,2	-0,3	-0,8	-0,6
EU27 GDP	0,8	0,5	0,7	0,5	0,7	-0,2	-0,4	-1,9	-2,4	-0,3

Source: Eurostat database, 2009

Figure 3. Employment and real GDP growth rate in EU27



The recent downturn in economic activity has some good implications, in terms of research and studies. For example, the need for short-term indicators which can illustrate the rapid changes in world economy has resulted in some new publications and monitoring instruments. European Union and the EU member states are world leaders in this area. One example is Business Cycle Clock (BCC) of Eurostat, a new graphical interface for displaying developments of economic key indicators for Europe as a whole as well as for each single European country. It helps users in their understanding of economic up- and downswings, and of the evolution in time and across countries. It is a visual aid as well as a portal towards European key statistics through its direct links to these statistics. In April 2009 Eurostat has introduced a new version of the BCC comprising new advanced functionalities as compared to the former BCC. Another example is an interactive map developed by NRC International, about the economic crisis in European Union, a map that shows the figures for all member states by year and quarter with GDP, budget deficit, unemployment rate, and inflation.

### Conclusions

The paper reviews the economic evolutions of European Union during the last contraction in the business cycle. We find that annual GDP growth rate in 2007 and 2009 for the 27 EU Member States are negatively correlated (the value of correlation coefficient is  $-0,716$ ): a higher growth rate before the crisis generated a deeper recession. Another contribution in this paper is the presentation of last business cycle in European Union in terms of peaks, recession and trough. We identified the peak quarter for all Member States and we analyzed the synchronization inside EU27. The conclusion is that EU27 is a two speed economy, with differences in growth rates and a weak cyclical synchronization.

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